

NORDIC LIGHT AND COLOUR 2012

Editors:
Barbara Szybinska Matusiak
Karin Fridell Anter

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Edited by: **Barbara Szybinska Matusiak and Karin Fridell Anter**

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NTNU - The Faculty of Architecture and Fine Art

Alfred Getz vei 3

N-7491 Trondheim

www.ntnu.no/ab

fak-adm@ab.ntnu.no

+47 73 55 02 75

NORDIC LIGHT AND COLOUR

In April 2012, NTNU held a PhD course titled "Nordic Light and Colours". It was funded by NordForsk and originated from the inter-Nordic transdisciplinary research project *SYN-TES: Human colour and light synthesis. Towards a coherent field of knowledge*.

The course included the task to write an essay on a topic within the participant's own field of research, including both colour and light. This publication presents a selection of these essays, together with articles where lecturers present topics that were presented at the course or in other ways are relevant for its theme.

All contributions have undergone a double blind peer review process, where internationally renowned colour and light experts have functioned as referees.

The selection of articles includes a broad range of topics referring to questions and theories of different disciplines. Thus we hope that the publication will contribute to the formation of *Colour and light* as a coherent and multidisciplinary field of knowledge.

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Leaders of the PhD course in April 2012 and editors of this publication;

Barbara Szybinska Matusiak

Professor, architect MSA, PhD
Leader of the Dep. Arch. Design, Form and Colour
Leader of Light & Colour Group at NTNU
www.ntnu.edu/bff/lightandcolour

Karin Fridell Anter

architect SAR/MSA, PhD, Assoc. Prof.
Leader of research project SYN-TES
www.konstfack.se/SYN-TES



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LIGHT AS EXPERIENTIAL MATERIAL

Karin Søndergaard & Kjell Yngve Petersen

ABSTRACT

The article: 'Light as experiential material' is concerned with the development of a psychophysical method of investigation, by which we can approach the experience and design of architectural lighting in research and education.

To our eyes, light becomes visible in the meeting with substance, and in this meeting it reveals its characteristics, as it reveals the matter it meets. Even if light is perceived as visual account, and therefore belongs to the visual domain, our sensation and perception of light includes a larger complexity of embodied and cultural processes.

Staged explorative situations offer concrete methods on psychophysical approaches for the investigation of architectural light design. The psychophysical method in discussion stages multi-sensory experience and inaugurate evidence on the basics of experiential accounts. The methods developed derive from performance and installation art and uses these art-forms as systematised frameworks and exercising methods to constitute an embodied and aesthetical approach in the work with architectural lighting.

Light as material – spatial and form-giving characteristics

It is commonly agreed, that “[l]ight is a prerequisite for our ability to see and experience the world around us. Light describes the surroundings on the basis of the variation of light intensities that reach our eyes. Light and shadow tell us about form, material, softness and hardness, lightness and weight” (Mathiasen & Voltenen 2008:115). As argued by the Danish architect and light designer Merete Madsen, light is to be considered as a sort of architectural material, “because in a very direct way [light] is a constituent part of the shaping of a space” (Madsen 2004:34). The particular quality of daylight as material is, that it “is of a changing and intangible character which is specifically qualifying exactly because of [this ambient] liveliness that is transmitted into a space” (Madsen 2004:34). Following Madsen, regarding light as a changing and “intangible kind of material, means that you need to work with light by skilful thought more than by crafts” (Madsen 2004:34). She concludes this by citing James Turrell; “A lot of the learning to work with light, since it doesn’t form by working with the hands as clay does, is this working with light through thought” (Madsen 2004:34).

This article introduces methods for engaging in the sensation of light and how it unfolds as experiential qualities. The method introduces qualities of experiential engagement as well as strategies for conceptual analyses. The architect Juhani Pallasmaa also brings forth the idea of ‘thought’ as a working mode, but relates to a multi-sensory and embodied mode of thinking: “It is similarly inconceivable that we could think of purely cerebral architecture that would not be a projection of human body and its movement through space. The art is also engaged with metaphysical and existential questions concerning man’s being in the world. The making of architecture calls for clear thinking, but this is a specific embodied mode of thought that takes place through the senses and the body, and through the specific medium of architecture” (Pallasmaa 2005:46). To perceive the presence qualities of light as a material in itself involves both the sensing of light, the thinking through a working mode, and the analysis of light in its spatial and form-giving characteristics.

The concept of light-zones, and simultaneously zones of darkness, is an approach to perceive, consider and analyse light in space considering the spatial and form-giving characteristics. “As concept, light-zone(s) are areas, fields or zones of light. It is a way of considering light in space as forms of bubbles or spheres of light, which as light-zones can be compressed, expanded, combined, exploded, etc., all according to the character of ‘the meeting’ between the light-zone(s) and the space itself (inclusive of the space’s content). Thus, the daylight

in a space can be regarded as a composition of light-zones” (Madsen 2005).

Light-zones are inseparable from the spatial context where they appear. The shape of the aperture (daylight) or armature (artificial light), as well as the distribution of (artificial) light sources, generates the particular illuminating effects, which is further influenced by the characteristics of the illuminated surfaces. The suggested method of experiential engagement described in this article, introduces a ‘thinking through experiencing’, which takes place through a multi-sensory embodied mode of investigation.

Architecture as an experiential encounter

The interest in articulating experiential accounts from within an embodied and multi-sensory engagement is an approach, which has references back in early experiential philosophy, and theatre and design practice. The difficulty is how to explain and bring evidence from the experiential qualities, and how to encounter an analysis that at the same time correlate with both outside observations and shared accountability. In citing Henri Bergson “[t]he objects which surround my body reflect its possible action upon them” (Bergson 1988:21), Pallasmaa argues, “[i]t is this possibility of action that separates architecture from other forms of art. As a consequence of this implied action, a bodily reaction is an inseparable aspect of the experience of architecture. A meaningful architectural experience is not simply a series of retinal images. The ‘elements’ of architecture are not visual units or gestalt; they are encounters, confrontations that interact with memory” (Pallasmaa 2005:63).

Already in the 1920s at Bauhaus “theatre provided a place in which to ‘experience’ space” (Goldberg 2001:102). At Bauhaus they argued for a research logic in the approach of staged methods and evidence formats, which lead to the emergence of performance exercises as abstract investigations into spatial and experiential phenomenon. “Production of space was being experienced here as a dynamic constellation of movements and tensions that went beyond the addition or subtraction of volumes [...] structures, forms, colours, light and above all rhythm became key categories of a new and elemental strategy in the research and construction of space. Walter Gropius called it ‘research of essentials’ – for a different, liberated architecture” (Blume 2008:45).

The Bauhaus investigations introduced the ‘mobile space’, the individually conceived spatial experience that follows the experiencer, which informs the architectural relationship at any moment and in any activity. As formulated by Walter Gropius “[t]he stage work is intimately related to the work of architec-

ture as an orchestral unit: both receive and give to one another reciprocally. As a consequence of this line of thought, artists in both stage work and architecture “had to seek the basic laws of the relationship between man and space, the essence of objects and ‘life-processes’ organised by the design of space” (Blume 2008:45).

Lászlo Moholy-Nagy discussed this man-space relationship as “a systematic ‘means of training’ human perception, [...] for expanding and sensitising the senses” (Blume 2008:51). As a consequence of the introduction of analysis through abstraction, he “was committed to an all-encompassing access to the phenomenon of space by understanding movement as an experience of a ‘super-spatial reality of pure energies’ [...] He defined ‘vision in motion’ [...] as ‘seeing, feeling and thinking in relationship and not as a series of isolated phenomena’” (Blume 2008:47). The approaches with formal abstraction and multi-sensory integration generated a succession of method-driven approaches, which opened for body-centred experiential accounts as a core part of analysis, discussion and creation across artistic disciplines.

Artforms as methods

“Architecture initiates, directs and organises behaviour and movement. [...] A building is not an end in itself; it frames, articulates, structures [and] facilitates. Consequently, basic architectural experiences have a verb form rather than being nouns. Authentic architectural experiences consist then, for instance, of approaching or confronting building, rather than the formal apprehension of a façade; of the act of entering and not simply the visual design of the door; of looking in or out through a window, rather than the window in itself as a material object; or of occupying the sphere of warmth, rather than the fireplace as an object of visual design. Architectural space is lived space rather than physical space, and lived space always transcends geometry and measurability” (Pallasmaa 2005:63-64). Like Pallasmaa speaks of architectural experiences as having a verb-form, back in the 1960s the artist Allan Kaprow advocated for an artform more verb-like than noun-like. Like Kaprow and Pallasmaa, the authors of this paper take an interest in the evolution of the experience while it is experienced, while all experiential components dynamically progress over time. How can the experience while engaged in the experience be qualified, and how is it possible to enable a position of observation within the activity of experiencing and its dynamic developments and complex integration of perceptive components?

Allan Kaprow, Robert Morris, and Dan Graham were among the many protagonists in the 1960s that made the first move

towards what we nowadays term as installation art. Installation art is considered as a hybrid discipline, which “includes architecture and performance art in its parentage” (Oliviera 1994:7). Through their engagement with the performing arts the artists became involved with the experiential aspect of performing in itself, and they began to develop strategies in order to arrange situations by which the audience could be disposed for a similar explorative experience.

Whereas Morris’ works constitute examples of working with sculpture or objects as architectural gestures, Kaprow approaches the participatory engagement in itself, and work towards a calculation of organised improvisations as a step toward participatory involvement into the structure of works. He invented concepts such as ‘the happening’ and ‘the activity’. ‘Activities’ do not have audiences “since the performer and experiencer is the same” (Kirby 1969:160-161). An activity is an improvisational structure that collapses the traditional oppositional role between audience and actor, and makes the audience engage performatively into a kind of extra-daily behavioural situation.

Our suggestion is to make use of artistic strategies such as Kaprow’s ‘activities’ and Morris’ ‘architectural gestures’ to develop on a systematised framework of methods to constitute an experiential system of approaches in the work with architectural lighting.

PSYCHOPHYSICAL ENGAGEMENT

Light and sensory experiences

When comprehending light as architectural material, by which we are enabled to shape spatial conditions, we realize how light can be considered as a primary in architectural thinking, and how it can develop as a primary concern of experiential thought. How the form characteristics of light actualize and is perceived as experienced phenomena, can be analysed as zones of light and darkness. To our eyes as a sensory experience, light becomes visible in the meeting with substance and in this meeting it reveals its characteristics as it reveals the matter it meets. However, as an experiential account, the light experience becomes a complex integration of all the aspects of psychophysical engagement that a lived experience entails.

We consider light to be perceived as vision and therefore belonging to visual domains. However, the concrete human experience of spatial light qualities is a multi-sensory experience and works with a “polyphony of the senses, [by which] the eye collaborates with the body and the other senses”, as Pallasmaa (2005:41) observes; a perceptive condition basic to hu-



FIG 01. Rehearsing multi modal sensibilities. Students in daylight studio explore the perceptual mode of engagement discussed as an extra daily state. The spatial conditions are explored through action/activities to enable an explorative position from within an experiential account.



FIG 02. Rehearsing multi modal sensibilities. Students in daylight studio engaged in a multi sensory exploration of spatial conditions generating a meta-conception of the perceiving self.

man experience. As humans we access and relate to the world through our senses and actions, our senso-motoric capacities, and the construction of phenomena in the environment, such as architectures and light formations, are negotiated in the relation between the body and the environment.

Following Pallasmaa "Sensory experiences become integrated through the body, or rather, in the very constitution of the body and the human mode of being. [...] Our bodies and movements are in constant interaction with the environment; the world and the self inform and redefine each other constantly. [...] [T]here is no body separate from its domicile in space, and there is no space unrelated to [...] the perceiving self" (Pallasmaa 2005:40). "Every touching experience of architecture is multi-sensory; qualities of space, matter and scale are measured equally by the eye, ear, nose, skin, tongue, skeleton and muscle. [...] Instead of mere vision, or five classical senses, architecture involves several realms of sensory experience which interact and fuse into each other" (Pallasmaa 2005:41).

Performative engagement as a psychophysical method

The 'psychophysical method' discussed below is a method by which we can approach experiential explorations of light in its complex modes of appearance and inaugurate evidence on the basics of experiential accounts.

The notion of 'psychophysical' and 'performative engagement' derives from the field of theatre and actor training techniques and as such include movement and action as structural tools for improvisational systems by which the beholder are enabled to investigate how he/she engages with a given surrounding – space, room or place. It is a perceptive method that activates the whole human bodymind, – an approach by which we investigate how we experience being in a given space, and what psychophysical impulses different orchestrations of daylight or different composed artificial light settings accumulate.

In exercising this training you are occupied with techniques that structure both body and mind generating a heightened state of engagement towards the surrounding space and what is at stake in that space. These techniques are of course designed as methods to help the actor perform on stage. But for the practitioner these techniques produce or build up an experiential capacity as a certain intuition on spatial concerns. Within theatre anthropology this shared and common phenomenon is discussed as an extra-daily state.

Extra daily & pre-expressive

In the course of the training the performer develops a capacity for performing, a scenic behaviour which is distinctly different from her every day behaviour. The performer's practice is, according to the theatre director Eugenio Barba, "the behaviour of the human being when it uses its physical and mental presence in an organised performance situation and according to principles which are different from those used in daily life" (Barba 1995:vii).

The actor and director Phillip Zarilli speaks of an "inner awareness [...] toward a heightened [...] state of engagement" (Zarilli 2007:57). This heightened state developed within performance practice, Barba terms an 'extra-daily' mode of presence, distinct from daily life behaviour, – obtained through performing practices, and evolving as a consequence of a cultivated technique.

The reference to an ordinary behaviour and daily use of techniques – such as eating, walking, and sleeping – is based on the anthropologist Marcel Mauss' (1950) concept of 'daily activities'. These ordinary behaviours are understood as human techniques conditioned by culture and everyday situations, embodied in human action and structures of social disposition. The concept of extra-daily is then "the utilisation of specific body techniques which are separate from those used in daily life" (Barba 2007:257).

The extra-daily expressive capacity of the expert performer is what Barba terms 'pre-expressive', a way of working particular to the performer. According to Zarilli the pre-expressive capacities are "characteristics shared by systems of training/exercise through which the actor works on oneself. [...] [e] exercises are not simply a means of toning the physical body, but creating an entire new awareness of the actor's internal life – not in a psychological or behavioural sense, but as a psychophysiological means of encountering the performative moment [...] a bodymind awakened, sensitized, made newly aware or fully concentrated" (Zarilli 2002:89).

Concepts such as 'the extra daily mode' and 'pre-expressivity' enable a discussion on the acting techniques as tool and method in itself that can be utilised in disciplines such as architecture and lighting design, to explore and enhance the potential qualities of engagement with a given spatial environment.



FIG 03. Rehearsing multi modal sensibilities. The photo catches a moment in a one hour long progressive improvisation exercise organised by rules/scored activities. The improvisation constitutes an 'exercise machine', which synthesise an explorative practice providing sensory thoughts.



FIG 04. Embodied Thought. Experiential engagement in daylight studio exploring a light-zone from skylight opening, and experiential engagement in artificial composed light-zones in a black box theatre.

Exercising pre-expressivity

The extra-daily capacity of pre-expressivity is developed and refined in exercises. The exercises situate the performer in a working relation to him/herself, organised within formal structures, which enables a focus on the art of the performer as an independent field of practice. The exercises are formal training devices, and the exercise "forms are empty [...] they are filled with [...] concentration" (Barba 1995:101), enabling a focused situation for the development of pre-expressive capacities.

Barba (1995:100) suggests the exercise event to produce 'a paradigm of dramaturgy', that is, a situation where a specific mode of presence is enhanced by way of the exercise. This extra-daily presence develops through an emergence of "a second nervous system, [or a] memory, which acts through the entire body" (1995:100). The exercise is a versatile environment for investigation and development of a variety of extra-daily behaviours, as Barba (1995:100) explains: "In each case it is a question of a well-contrived web of actions. [...] Exercises are pure form, dynamic developments without a plot, a story. Exercises are small labyrinths that the actors' body-minds can trace and retrace in order to incorporate a paradoxical way of thinking, thereby distancing themselves from their own daily behaviour and entering the domain of the stage's extra-daily behaviour."

The improvisation exercises are driven by tasks, as scored activities, which develop into exercise machines. Figure 03 shows students engaging in an improvisation guided by such instructions, and, in a paradoxical way of thinking – as an embodied mode of thought, experience themselves acting and sensing, reflecting on their own experiential situation.

These "senses not only mediate information for the judgement of the intellect; they are also a means of igniting the imagination and of articulating sensory thoughts. Each form of art elaborates metaphysical and existential thought through its characteristic medium and sensory engagement" (Pallasmaa 2005:45). The task utilized in the exercises, driving the development of experiential capacities towards light phenomena, are particular to the architectural context, but fundamentally awakening very similar spatial sensibilities as those of the performer. The strategic method can be slightly adjusted to the particular task, adapting to the medium and qualities under investigation; for instance the phenomena of light-zones.

The strategic method to some extent evolves a new sense-capacity, a new ability of critical relation to light phenomena, which to some extent will remain and develop as a personal capacity. This is an 'extra-daily' capacity that can be mobilised

through these methods, these systems of activities, engagement and staging strategies. There is potentially opened for a field of experiential practice of thinking through performative engagement, which could be transferred to other enquiries by adapting the particular approaches to the phenomena of interest.

EXPERIENTIAL ENGAGEMENT

Spatialization and temporalization

The change from observing from the outside, towards experiential observations from within generating the experience, is an investigatory style that actively challenges the conceptions of space and time. There is opened for an analysis where everything is in constant change, where the basic phenomenal status of space and time is altered towards modes of 'spatialization' and 'temporalization'. That means that the sense of space unfolds as notions of place and direction, nearness and distance. Likewise the sense of time is formed by the duration and hesitation in the actions.

In everyday life, space is normally understood as a stable context wherein temporal events occur. Pallasmaa suggest, "Architecture is our primary instrument in relating us with space and time, and giving these dimensions a human measure. It domesticates limitless space and endless time to be tolerated, inhabited and understood by humankind. As consequence of this interdependence of space and time, the dialectics of external and internal space, physical and spiritual, material and mental, unconscious and conscious priorities concerning the senses as well as their relative roles and interactions, have an essential impact on the nature of the arts and architecture" (Pallasmaa 2005:17).

A consequence of the method with performative engagement is that the notion of space as stable is substituted for an experiential account, where spatialization is a consequence of the human activities; the walking, the direction of attention, or the hesitation when considering the possible future actions and movements to be performed. The sense of space is a construct generated by the way we think space. In the method of performative engagement the experience of space unfolds and actualises. As the architectural philosopher Elisabeth Grosz discusses, "space in itself [...] is not static, fixed [...] though perhaps we must think it in these terms in order to continue our everyday lives. [...] Space, like time, is emergence and eruption, oriented not to the ordered, the controlled, the static, but to the event, to movement or action" (Grosz 2001:116).

The perception of spatialization and temporalization is an experience of continuous unfolding, an emergence in the present, of



FIG 05. Simple composition/design of a square & sharp, and, a round & diffuse light-zone. The two different designs serve as models for exploration.



FIG 06. Light design in the black-box of a square & sharp, and, a round & diffuse light-zone. This image gives a sense of the presence and volume of the light-zones.

the virtual becoming actual. As Grosz explains it: “[o]ur perception is a measure of our virtual action upon things. The present, as that which is oriented towards both perception and action, is the threshold of their interaction and thus the site of duration. The present consists in the consciousness I have of my body” (Grosz 2001:121). Consequently the modality of presence becomes an ever transforming extended now, a mode of duration, where the “[d]uration [...] is a mode of “hesitation”, [...], unfolding, or emergence” (Grosz 2001:114). In the extreme version of exploratory engagement, we could say that the virtual time and virtual space become mutually generative, where intensities of both spatialization and temporalization is mutually generated and modified within the investigatory activity.

A further perspective could be to develop models for “virtual time becoming virtual space” (Grosz 2001:120), enabling analysis of futurities and other alternate actualities. The systematic experiential engagement generates a self-reflective presence, which enables a testing ground for ‘thoughts’ across time and space parameters. That is a staged explorative design condition where the complex relations between the designed and the experienced can be interrogated. The question is how the world is experienced while in action, and how these insights might inform transient perspectives and enable thinking of the experiential in architectural invention and experimentation.

If we image an involvement in spatial investigations where the detailed fixation and measurement is not the primary aim, but rather the multimodal engagement and the senso-motoric orientation, then we engage with ‘the flesh of the world’ as Pallasmaa argues: “The very essence of the lived experience is moulded by hapticity and peripheral unfocused vision. Focused vision confronts us with the world whereas peripheral vision envelops us in the flesh of the world” (Pallasmaa 2005:10).

Experiential accounts from within light-zones

The staged investigations use a simplified light formation and spatial context: a simple design of light-zones with theatre luminaires and staged in a black-box environment, where the spatial qualities and directions are formed by the light setting only. The particular context for these investigations of experiencing light through theatrically designed light-zones also opens for an investigation of light formations as a material in itself. (Fig 05-07)

“The spatial and form-giving characteristics of light-zones and darkness-zones can be described as follows: Light-zones create areas, places or zones to be in, whereas zones of darkness create thresholds and transition zones. The composition of light-zones and darkness-zones also change the appearance of

a space. Perceptually, bright surfaces seem to advance and expand in space, while darker areas seem to diminish and shrink. Furthermore, the daylight of a light-zone has the potential of ‘revealing’ space, form, and matter, whereas deep shadows and darkness conceal” (Madsen 2005).

In the investigation discussed here, a square light-zone and a round light-zone are models for exploration. The two light-zones constitute a set of basic and very simple designs, where it is possible to comprehend the design decision before entering into experiential investigations. The light-shapes are constructed by theatre luminaires in a black-box environment. It is a simplified version of two types of light-zones: one round with diffuse edges and one square with sharp edges. The construction of the light-zones is explicit, one can see the luminaires and the lit form on the floor, and the volumes of the light-zones are very easily understood by holding out a testing hand. As such, a district volumetric light design is present while simultaneously enabling an experiential investigation of other non-volumetric qualities of the light-zones.

The two staged light-zone designs constitute a rehearsal environment for the development of pre-expressive capacities towards these particular light formations. Below is a summary of observations (Søndergaard 2010:201-210), collated from several investigatory events, which gives a view into the sensibilities evoked by the exercise.

The sharp and square light-zone evokes the sensation of a defined place, with rigid directional features, and is experienced as clearly separated from the larger surrounding space. Standing in the darkness outside of the sharp/square light-zone is sensed as inhabiting a definite other space. Any position of standing or way of moving, inside or outside, is sensed as always defined by the shape of the light-zone rather than defined by the persons positions or movements. The sharp/square light-zone establishes a distinct place to visit or inhabit, and promotes tendencies to maintain clear positions and stay still. The sharp/square light-zone makes people intensively aware of each other, often resulting in defensive body postures, or leading to constant re-negotiation of positions and relative directions. The situation causes a build-up of suspense among people, and actions such as touching or looking at each other triggers immediate reactions. There is an increased experience that people individualize themselves from the group, and encounter each other in restless demands of the relations to one another, in continuous detailed negotiations of the social operations of the group.

The diffuse and round light-zone evokes the sensation of a gradual intensity of a location, and can be identified and related to as a particular zone even when standing out in the darkness. There is



FIG 07. Embodied Thoughts. Methods of performative engagement for explorative exercises of simple light-zones.



FIG 08. Triangular experiential negotiation. The photo shows a situation from a 'white box' environment, where a group of six students are rehearsing the triangular system, involved in an experiential negotiation rotating in-between three different observation positions.

no sense of direction and no particular separation of being inside or outside the light-zone. This lack of distinct separation evokes a sense of one unified place, equally qualified by the all grades of lightness/darkness as part of the same placeness. The diffuse/round light-zone produces a varied sense of place and directions depending on where one stands and how one move. People's positions and movements, more than the shape of the light-zone, defines the placeness qualities, and this sensation is further intensified through exploration. In the diffuse/round light-zone, people can move around getting really close seemingly without tension. People behave relaxed, informal and they do not seem to uphold any positions or to challenge each other. Simultaneously as they are touching and even hanging on to each other, they are not producing distinct positional roles or separate individual agendas in relation to each other. On the contrary there is even a tendency that each person could seem to create her own individual sense of realm but still interact with the group.

Triangular experiential negotiation

The complex of perspectives and self-reflective positions, which is part of the pre-expressive capacity and extra-daily state of engagement, can be organised in a simple triangular methodological system by a team of investigators. The cooperative approach enables the development of a shared language on the experiential accounts, the development of shared analytic capacities, and facilitates an experimental environment for the exploration of emerging possibilities and qualities. (Fig 08)

The triangular method operates with a selection of observer roles similar to the self-reflective position of the performer, and is specific in the way it situates a collective of investigators in different positions of observation within the same explorative engagement. The method enables a structure of engagement by which a group can share a firsthand experience and explore this same experience from different positions as a comparative qualitative investigation.

The triangular set of observer positions:

1. The first participant observes from a position inside the experience of a performative engagement, wherefrom the light zone is explored and the participant speaks from her first-person experience.
2. The second participant observes from a position outside the light zone in continuous discussion with the first, — a referent position as external observer who interviews, reflects on and registers the first-person experience.
3. The third participant observes from an outside position and uses a camera to frame and document the first-person experience likewise from an external position.

Each of the roles is a distinct experiential position, which creates a set of mutually critical position for observing the exploration from within the experiential process while performing the engagement.

Together, the three positions maintain each other in a triangularity of performative engagement in an organised performance situation and generate a shared mode of presence similar to that of the performer's extra-daily state.

The team repeatedly change positions to make sure that each person rotates through all positional roles several times. The participants synthesise their experience of all three observer positions, and attain a capacity for overviewing the totality of the situation and the relational operations that qualifies it. The solo experience from any of the roles by themselves will lack the mutual constitution process, whereby they integrate the three modes of engagement. The reflective coordination between the three positions in the moment, as a shared experiential event, is a crucial quality of the method. After a process of adapting the method, understanding how it works as a processual tool, the participants can stage similar explorative/analytic/generative processes on any other topic that need an experiential design approach.

The experiential accounts, and the pre-expressive capacity, is in this way no longer a unique personal phenomenon, but brought into a collective discussion and formalised as shared observations. The triangular performance analysis also enables the individual to gain an overview from both within the experience, from outside, and in negotiation. This organised situation forms an extra-daily mode of analytic presence, which is developed as a capacity for future investigations and design processes.

(Petersen & Søndergaard 2011:90)

EXPERIENTIAL ARCHITECTURE

Architecture as staging devise

The idea of architecture as having a staging agenda embedded for people to improvise their daily life was eagerly discussed by the architect Steen Eiler Rasmussen already in the 1950s. In his thinking, the architect acts as a "theatrical producer, [...] who plans the setting for our lives" (Rasmussen 1959:10), and he suggested human experience as a primary source for architectural design strategies. The architectural theorist Marianne Krog Jensen takes Rasmussen's argument even further in stating, "architecture is a cultural action [...]. We no longer ask what architecture is; we ask what it does. Space is something that unfolds; it is defined through movement, action and creation" (Jensen 2010:81). The experience of architecture



FIG 09. Exercise Machine in a laboratory setting. The Frame as an architectural gesture; embedded staging agendas by way of composed zones of light.



FIG 10. The Frame and light-zones as Exercise Machine staging experiential situations, where the light setting operates as an embedded dynamic structure, promoting an enhanced sense of spatial negotiation.

emerges out of the activities of living and is shaped by the negotiation between our experiential accounts and our performative engagement.

Thinking of architecture as an artistic composition of physical appearance that shapes the conditions for our living, we need to include an "understanding [of] man and his surroundings as flows that constantly interact and transform each other" (Jensen 2010:84). In this understanding architecture deals with experiential processes and situations in which also social spheres are at play, and space appears as an emerging phenomenon that is constituted in the instantaneous experience of it. The suggestion is to arrange staging devices as rehearsal machines for extra daily and pre-expressive capacities.

Thinking of architecture as a staging device that maintains a particular time and space form, a firmness in the world to relate to, a context for presence and directions, opens for a method of staging experiences using architectural elements, which "frames, halts, strengthens and focuses our thoughts, and prevents them from getting lost" (Pallasmaa 2005:45). To situate experience as a critical medium in architectural processes means working with the production of experiential forms of material evidence, which could be pursued through the staging of specific experiential situations.

Staging improvisation in exercise machines

As discussed, the training of pre-expressivity in staged situations develops a certain heightened self-reflectivity, a "technique of acculturation [that] artificializes [...] the performer's behaviour" (Barba 2007:257) and builds an ability to observe action and observe observation while in action, an extra-daily mode of attention and action. The stagings work as 'exercise machines' that "put the [participant] to the test through a series of obstacles [and] allows the [participant] to know [...] herself through an encounter" (Barba 1995:101), where the staging device situates a specific focus on an aspect of herself as a performing entity, and in this way situates an analytic site for advanced self-reflection on pre-expressive capacities as a distinct extra-daily behaviour.

The pre-expressive preparedness facilitates a qualified situation for improvisation in a staged event, an elaborate mode of extra-daily behaviour that skilfully allows the participant to articulate through formal pre-expressive activities. This architectural staging effects the situation as a habitat for the architect to improvise extra-daily behaviour. (Fig 09 and 10)

The staging can be considered as an 'exercise machine' that makes improvisation possible by its contextualising framework,

as an open possibility for engagement, and at the same time directs a particular condition for the improvisation activities, specifying how to engage.

The frame-object combined with light-zones

The staged investigations use a simplified spatial object: a frame object the size of a wall. Placed in the theatrical black-box environment, the light formation is a simple design of light-zones with theatre luminaires on each side of the frame-object. The frame is a simple architectural object, which divides the space in two identical mirrored areas, and is designed to stage an external exercise machine. The frame-object is even sized horizontally and vertically, 230x230 cm, with a boarder size of 35x35 cm. The hole in the frame-object situates the viewing of humans in full size on the other side. Two identical light-zones, one on each side of the frame-object, produce an even place-ness characteristic on both sides of the frame-object.

The frame-object introduces a distinction that separates space in two sides and arranges for human relations to be explored. According to Grosz, the staging of a wall generates this distinction, and "constitutes the possibility of an inside and an outside, dividing the inhabitable from the natural. [...] The wall divides us from the world, on one side, and creates another world, a constructed and framed world, on its other side" (Grosz 2008:14). The staging of the frame and light-zones enable investigation into how the spatial configuration instantiate high-order relationships among people, and how the light setting promotes performative engagement.

The distinction generated by the frame-object marks certain relational possibilities, and "provides new connections, new relations, social and interpersonal relations, with those on its other side" (Grosz 2008:14). The frame-object allows people to be confronted, and enables a symmetrical relationship between the sides of the frame-object. The frame-object can be passed and is therefore simultaneously abstract and concrete, a separator and a passage, and it stages a social agreement on a certain set of social framing operations.

Dynamism originating from the light design

The design of the light-zones indicates enclosed areas, with diffusion on the border between light-zone and dark-zone, and with the priority of a higher lit area central to the framed perspective. These priorities of light are further arranged in a way that produces a varied pattern in the light, not dissimilar to an everyday daylight experience.

The dynamic transformational aspect of daylight consequently evokes a varied spatial experience. In the frame-object the vari-



FIG 11. Daylight workshop. White-cubes used as sites for the construction of kinetic systems, which orchestrate dynamic compositions of light-zones in the cubes.



FIG 12. Daylight workshop. The students build kinetic daylight instruments in the white cubes, which channel and shape daylight.

ations in the artificial light design is used as a way to promote performative investigations. The light design is stable over time but varied over space, and every movement by the investigator is enhanced and qualified by the experience of light variation, while standing still leaves the investigator with no feedback. The light intensity, and how light falls onto the bodies, changes depending on how and where they move. This differentiated intensity makes people move in the examination of how the light is experienced at different places in the lit areas. These are qualities that operate as an embedded dynamic structure, and lead the investigators into a dynamic state of investigation.

Staging nearness and distance

The frame-object causes a particular experience of being coupled with the other on the opposite site. The frame that separates somehow legitimates this intimate sense of coupling. The felt or imagined distance caused by the complexity of the situation can't be measured in measurable parameters but is comparable to standing in front of a mirror, just with the notable difference, that it is not yourself you see on the other side of the framing, but another person. The two equal behavioural conditions, placed opposite each other, generate an enhanced sense of nearness while simultaneously producing a sense of enhanced distance. Grosz speculates on the qualities of spatialization: "If past, present, and future are always entwined and make each other possible only through their divergences and bifurcations, then perhaps there is a way to consider spatiality in terms of relations of nearness and farness, relations of proximity and entwinement, the interimplications of the very near and the very far, rather than of numerals or geometry" (Grosz 2001:129). The frame-object is deliberately designed to promote a particular experiential condition, an enhanced sense of spatial negotiation. (Fig 09 and 10)

The two ladies standing close on each side of the frame-object (figure 10) are in a deep investigation of the nearness qualities evoked by the staging. Grosz speculates along the lines of how architectural devices can be said to promote certain experiential conditions. In this case the frame-object stages a continuous re-emergence of virtual-actual relations, within which the ladies are engrossed.

"This possibility returns us once again to the vexing question of the virtual and its particular spatial resonances. One cannot of course directly specify what a virtual is, for insofar as it is, insofar as it exists, it exists as actual. In the process of actualization, the virtual annuls itself as such in order to re-emerge as an actual that thereby produces its own virtualities. At best one can specify what the virtual may produce, what effects or differences it may generate" (Grosz 2001:129).

WHITE-CUBE INVESTIGATIONS ON EXPERIENTIAL LIGHT DESIGN

Explorative processes of experiential light design

The performative method has been successfully used as a tool in daylight workshops at the School of Architecture, Copenhagen, generating a specific mode of investigative practice with explorative thinking through various procedures of abstraction. The specific focus in the courses is on daylight kinetics, that is, how kinetic structures form the daylight influx. The students investigate possible designs of daylight openings, and interrogate how these designs are imperative for the unfolding of the spatial qualities of lightness and darkness. (Fig 11 and 12)

The development of prototypes and experiential evidence emerge through a series of authoring processes, iteratively refined and often overlapping or re-visited:

1. The students develop particular experiential sensibilities through performance training
2. Ideas are tested through serial explorations of design possibilities in model sketching
3. A select model is built as a full-scale prototype
4. The team of students engage in repeated experience of light situations within the prototypes

The full-scale prototypes are white cubes, 240 cm on all sides, with an open top fully exposed to the sun and the sky. The investigation explores the effect of the highly complex and dynamic daylight inflow, introduced as experiential staging of architectural lighting designs. The projects described investigate kinetic daylight mediators and their effect on the light qualities and colours of the interior surface and volume of the cubes.

The daylight explorations make use of the experiential techniques to stage situations in which the students simultaneously act, experience and directs their own processes of performative engagement. This method operates, as described previously, with a selection of observer roles, and is specific in the way it situates a collective of investigators in different positions of observation within the same explorative engagement. The first participant observes from a position inside the experience. The second participant observes from a position outside the light zone in continuous discussion with the first participant. The third participant observes from an outside position and uses a camera to frame and document the first-person experience. Figure 13 shows the external observers standing on ladders, taking notes and shooting photographs, while the experiential participant explores the light situation in the white-box.

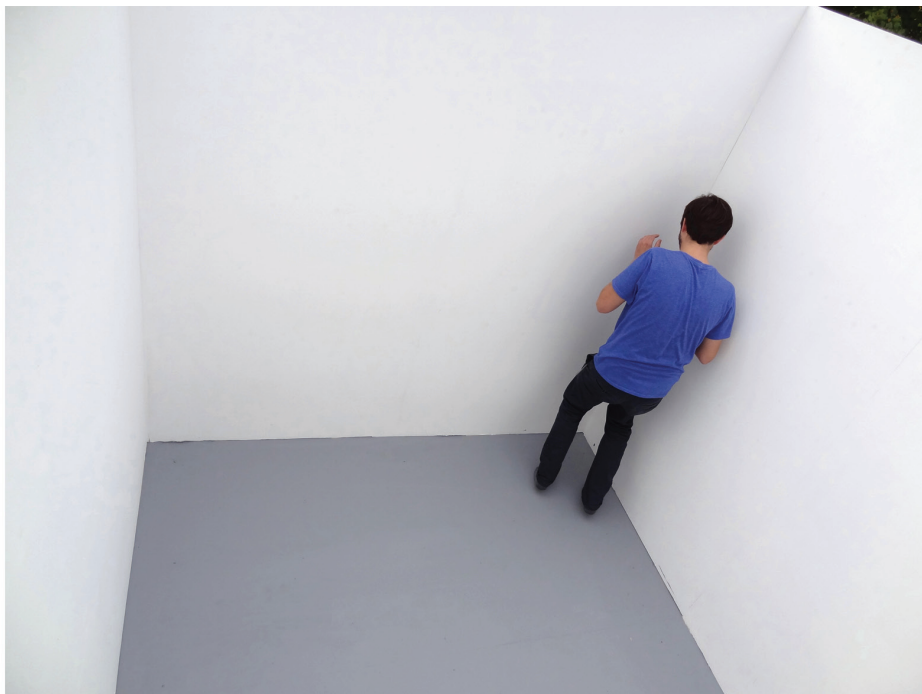


FIG 13. Daylight workshop. Students use the triangular system of exploration at the white cube site. While one person is engaged in performative explorations within the cube, his fellow colleges are observing from the outside standing on ladders.



FIG 14. Daylight workshop 2012. Composing light-zones in white cubes by way of kinetic instruments.

The students develop extra-daily orders of reflection, explore possible design strategies through models, build prototypes, and explore the light situations they have instantiated. In the preparation of the prototype environments, the students iteratively stage experiential investigations to guide the design process, moment by moment observing and reflecting on these processes of engagement while these unfold, and altering the design accordingly.

Virtual as potential

Following Grosz the sense of 'being situated' as participant could be said to be a staging "of a certain virtuality, a potential" (Grosz 2001:93). The potentials can be identified as those virtual possibilities that specify the contexts for the actualisation of the experience at any moment. The actualisation of the virtual is a way to understand the dynamics of that which the experience potentially is to become. The awareness of the engagement and the context of the situation are generated simultaneously as the event progresses. The suggestion is to compose virtual potentials, which prepare for particular experiences to emerge from the processes of engagement in the staged event. In line with S.E. Rasmussen, the architect is a theatrical producer, understanding theatricality as our virtual projections upon experienced situations (Feral 2002), – that is, how we through our activities, senses, and memories develop imaginary potentials of the given situation and hereby shapes futurity, shapes potential focuses on the matter investigated, shapes visions to be practically investigated.

The participatory experience in staged situations is, according to Dan Graham, especially evoking attention to 'a pure present tense' and stages a heightened awareness towards how experience appears. He suggests, "the perceptual process ... should [...] be understood as a continuum spanning past, present and future" (Graham in: Bishop 2005:72). The philosopher Henri Bergson (1988) discusses this notion of the present as an expanded durational experience and as an extended site of perceptual negotiation. He argues for a 'lived reality' located in the processes between appearance and memory, as a matter of memory that operates on the relation between what exists and what appears, that is, the relation between our activities in the present and our perception of our presence. Elizabeth Grosz suggests this realm of perceptual negotiation as a process of the actual entering into negotiation with the virtual, arguing duration as an actualisation "of the virtual as that element of the past which contains the potential to generate a future different from the present" (Grosz 2001:xx-xxi).

When rehearsing the ability to exercise experiential engagements, the methods used and qualities attained becomes a multisensory and embodied mode of thinking; an expert practice of what Pallasmaa (2005:46) points at as embodied thought, brought to a level of skilled capacity that enables an experiential position in architectural design processes. What is the qualities in wandering, hesitating, moving 'in the flesh of the world'? Is it also, through embodied thought and being embedded in the world, to start imagining new possibilities; to imagine experiences of light and pursue the virtual as potential, expanding on the experienced qualities using the triangular method, and designing from the dynamic experiential position; from within experiencing?

Experiential engagement with architecture

The prototype development has the ability to stage experiential situations. The prototypes are designed as formal architectural experiential machines, which by way of the build-in staging capacities situate the participant in well-defined experiential situations. The experiential staging transfers their insights body to body, a bodily identification as Pallasmaa suggests: "We behold, touch, listen and measure the world with our entire bodily existence, and the experiential world becomes organised and articulated around the centre of the body. [...] We are in constant dialogue and interaction with the environment, to the degree that it is impossible to detach the image of the Self from its spatial and situational existence" (Pallasmaa 2005:64). In that way it becomes possible to articulate experiential accounts from one body to another, conveying qualities that are only accessible through direct experience. A kind of mimesis of the body with transfer of embodied insights through staged situations, similar to what Pallasmaa suggests is a core part of the architectural process: "during the design process, the architect gradually internalises the landscape, the entire context, and the functional requirements as well as his/her conceived building: movement, balance and scale are felt unconsciously through the body as tensions in the muscular system and in the positions of the skeleton and inner organs. As the work interacts with the body of the observer, the experience mirrors the bodily sensations of the maker. Consequently, architecture is communication from the body of the architect directly to the body of the person who encounters the work, perhaps centuries later" (Pallasmaa 2005:66-67).

Staged explorative situations offer concrete methods on psychophysical approaches for the investigation of architectural light design. The psychophysical method in discussion stages multi-sensory experience and inaugurate evidence on the basics of experiential accounts. The methods developed derive from performance and installation art and uses these



FIG 15. Daylight workshop 2012. Composing light-zones in white cubes by way of kinetic instruments.



FIG 16. Daylight workshop 2011. Composing light-zones in white cubes by way of kinetic instruments.

art-forms as systematised frameworks and exercising methods to constitute an embodied and aesthetical approach in the work with architectural lighting.

The developed methods and the exercise-machines (or sites) allow for and legitimize personal experiences to be refined as aesthetical discussions in shared sites. The complexity of experiential awareness is structured as sites to be shared in the design investigations. In these experiential and explorative sites, terms such as futurity and virtual potentialities become accessible as shared conceptions in the design environment.

Event partners

The laboratory investigations on 'the square and round light shapes' and the Frame object was organized in collaboration with Boxiganga Performance Theatre, Copenhagen (2004-2005), assisted by Ole Kristensen and Simon Moe.

Masterclass was organized in collaboration with Royal Academy of Fine Arts, School of Architecture, Architectural Lighting Laboratory, Copenhagen (2006), assisted by Architect MAA, Nanet Mathiasen.

The White Cube workshops was organized and conducted in collaboration with Associate Professor, Architect MAA, Karina Mose (2011 & 2012), The Royal Academy of Fine Arts, Schools of Architecture, Copenhagen.

Images

Photographs by the authors Karin Søndergaard & Kjell Yngve Petersen, participants in the workshops, and Ole Kristensen, Simon Moe, and Karina Mose.

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